

CLAIMS

1. A method of operation of a networked device in a network having at least one other device, the method including:

5 sending (104) a simple device description query message to at least one other device requesting a simple device description;

receiving (106) from the other device a simple device description message of defined length including a device type value representing the type of the other device;

10 sending (108) an extended device description query message to the other device requesting an extended device description from the other device; and

receiving (110) from the other device an extended device description of variable length.

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2. A method according to claim 1 further including establishing (102) the network address of another device or other devices before the step of sending (104) a simple device description to at least one other device.

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3. A method according to claim 1 or 2 wherein the simple device description message (230) is in the form of a token-compressed message compressed from a human-readable message format, the message including a device type value (232) representing the type of the other device; the device type value being selected from a device type hierarchy having predetermined top level elements including a controller device type (52) and a basic device type (54), and at least one further level of subsidiary device types depending from the basic device type and inheriting properties of higher level device types on which the subsidiary device type depends, but not including any further level of subsidiary device types depending from the controller device type.

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4. A method according to claim 3 wherein the networked device is a controller device (2) comprising a list (24) of device types that the controller can control.

5 5. A method according to claim 4, the method further including determining whether the networked device can control another device by :
determining the lowest level of device type that either is the device type of the other device or is a higher level device type from which the device type of the other device depends, in the list of device types that can be controlled
10 by the controller, to determine the extent to which the networked device can control the other device.

6. A method according to claim 5 further including:
receiving a controller query message from another device including an
15 requested device type value to request whether the controller is able to control a device of the requested device type; and
responding with a controller response message including a device type value representing the lowest level of device type in the list of device types that either is the requested device type or is a higher level device type from
20 which the requested device type depends.

7. A method according to claim 2 wherein the predetermined top level elements in the device type hierarchy further include a composite device type, and the networked device is of the composite device type having the
25 functionality of an integer number of other devices, the method further comprising:

responding to a received simple device description query message by sending a simple device description message (230) including the device type value (232) representing the device as a composite device and further an
30 integer sub-device number being the number (234) of other devices.

8. A method of operation of a networked device, including:

receiving (104) a simple device description query message from one of the other devices requesting a simple device description;

5 sending (106) to the other device a simple device description message of defined length including a device type value representing the type of the networked device;

receiving (108) an extended device description query message from the other device requesting an extended device description from the networked device; and

10 sending (110) to the other device an extended device description of variable length.

9. A networked device, including:

a transceiver (8) for sending and receiving messages: and

a message handler (26, 182) arranged to carry out the steps of:

15 on receiving (104) a simple device description query message from one of the other devices, sending (106) to the other device a simple device description message of defined length including a device type value representing the type of the networked device; and

20 on receiving (108) an extended device description query message from another device sending (110) to the other device an extended device description of variable length.

10. A networked device according to claim 9 wherein the simple device description message (230) is in the form of a token-compressed message compressed from a human-readable message format, the message
25 including a device type value (232) representing the type of the other device; the device type value being selected from a device type hierarchy having predetermined top level elements including a controller device type (52) and a basic device type (54), and at least one further level of subsidiary device types
30 depending from the basic device type and inheriting properties of higher level device types on which the subsidiary device type depends, but not including

any further level of subsidiary device types depending from the controller device type.

11. A networked device, including:
- 5 a transceiver (8) for sending and receiving messages:
a message handler (26, 182) arranged to carry out the steps of:
sending a simple device description query message to another device
requesting a simple device description;
receiving from the other device a simple device description message of
10 fixed length including a device type value representing the type of the other
device and a field indicating whether an extended device description is
available;
and further arranged to optionally carry out the steps of:
testing the simple device description message to determine whether an
15 extended device description is available;
sending an extended device description query message to the other
device requesting an extended device description from the other device; and
receiving from the other device an extended device description of
variable length.
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12. A networked device according to claim 11 wherein the simple
device description message (230) is in the form of a token-compressed
message compressed from a human-readable message format, the message
including a device type value (232) representing the type of the other device;
25 the device type value being selected from a device type hierarchy having
predetermined top level elements including a controller device type (52) and a
basic device type (54), and at least one further level of subsidiary device types
depending from the basic device type and inheriting properties of higher level
device types on which the subsidiary device type depends, but not including
30 any further level of subsidiary device types depending from the controller
device type.

13. A networked device according to claim 12 wherein the networked device has the controller device type,

wherein the networked device comprises a list of device types that can be controlled by the networked device, so that the networked device can determine the extent to which the networked device can control another device by determining the lowest level of device type that either is the device type of the other device or is a higher level device type from which the device type of the other device depends, in the list of device types that can be controlled by the controller.

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14. A networked device according to claim 13 wherein the message handler is arranged:

to receive a controller query message from another device including an requested device type value to request whether the controller is able to control a device of the requested device type; and

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to respond with a controller response message including a device type value representing the lowest level of device type in the list of device types that either is the requested device type or is a higher level device type from which the requested device type depends.

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15. A system, comprising

a plurality of networked devices each having a transceiver for sending and receiving network messages;

at least one networked device arranged to send a simple device query message to other devices and to receive and interpret simple device description messages subsequently received from the other devices;

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at least one networked device arranged to send an extended device query message to other devices and to receive and interpret extended device description messages subsequently received from the other devices;

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each of the networked devices being arranged to respond to an incoming simple device query message from another of the devices by

sending a simple device description message of defined length including a device type value representing the type of the device; and

at least one of the networked devices is arranged to respond to an incoming extended device query message from another of the devices by
5 sending an extended device description message.

16 A system according to claim 15, wherein the plurality of networked devices include at least one simple device without the capability to decompress messages and interpreting directly compressed messages and at
10 least one complex device including a message decompression arrangement (184) for decompressing the messages and a message interpreter for interpreting the decompressed messages.

17. A system according to claim 15 or 16 wherein the predetermined
15 top level elements further include a composite device type;

the system includes at least one networked device of the composite device type having the functionality of a predetermined number of other devices, the predetermined number being an integer greater than or equal to 2; and

20 each of the at least one networked device of the composite device type responds to an incoming device query message requiring a simple device description by sending a simple device description (230) including the device type (232) as a composite device and a sub-device number (234) representing the predetermined number of other devices.

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18. A computer program for controlling a networked device, the computer program being arranged to cause the networked device to carry out the steps of a method according to any of claims 1 to 8.

30 19. A computer program for controlling a networked device, the networked device having a transport stack and an application, the computer program comprising:

code implementing a transport adaption layer (180) for interfacing with the transport stack;

code implementing an application programming interface (186) for interfacing with the application; and

5 code implementing a messaging layer (182) including the capabilities of sending and receiving messages in a token-encoded human readable messaging format, the code being arranged to cause the networked device:

to recognise incoming device query messages requiring a simple device description response and to provide a simple device description response
10 including a device type; and

to recognise incoming device query messages requiring an extending device description and to respond with an extended device description.

20. A computer program according to claim 18 or 19 recorded on a
15 data carrier (14).

21. A network establishment and management protocol for controlling electronic devices, the protocol being recorded on a record medium, the protocol comprising:

20 a compression algorithm (210) defining the mechanism for compression of said messages

a definition (200) of a generic message format, the messages being compressed XML compliant messages; and

a definition (204) of message sequencing requirements.

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22. A system in accordance with a network establishment and management protocol for combining electronic devices according to claim 21.